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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/071,617	02/08/2002	Hiddenobu Hamada	10873.878US01	1855

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EXAMINER

PAK, SUNG H

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 08/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/071,617

Applicant(s)

HAMADA, HIDENOBU

Examiner

Sung H. Pak

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☒ Claim(s) 7-22 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,4. 6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

All references submitted in the information disclosure statement have been considered by the examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Sekine et al (US 2001/0026659 A1).

Sekine et al reference discloses an optical device with all the limitations set forth in the claims, including: a first optical member separating an incident light of a certain wavelength into a TE wave and a TM wave (Fig. 4); an optical input portion, which inputs the incident light into the first optical member ("4a"); wherein the first optical member has a periodically changing refractive index (Fig. 1); wherein an angle defined by a first reciprocal lattice vector and a second reciprocal lattice vector is not larger than 90 degrees (Fig. 4); wherein the first optical member has a structure in which a plurality of materials of different refractive indices are arranged with constant period in a two-dimensional direction (Fig. 1); wherein the optical input portion inputs the incident light

in a direction that is parallel to a plane including the first reciprocal lattice vector and a second reciprocal lattice vector (Fig. 4).

Although Sekine et al reference does not explicitly state that that TE wave has a wave number larger than that of TM wave in the first reciprocal lattice vector and that TM wave has a wave number larger than that of the TE wave in the second reciprocal lattice vector, such is inherently disclosed by the reference since TE and TM waves are distinctly separated along the reciprocal lattice vectors by the photonic crystal structure. Therefore, the reference inherently anticipates the claimed limitations of the instant application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sekine et al (US 2001/0026659 A1).

Sekine et al reference disclose an optical device with all the limitations set forth in the claims as discussed above, except it does not teach the use of optical fibers at input and output portions. However, the use of optical fibers for inputting and outputting optical signals is well known and commonly taught in the art. Optical fibers provide a well known advantage of providing a flexible light conducting media. Therefore, it would

Art Unit: 2874

have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Sekine et al device to have optical fibers for inputting and outputting optical signals from the device.

Allowable Subject Matter

Claims 7-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: An optical device comprising an optical member for separating an incident light of a certain wavelength into a TE and TM waves along reciprocal lattice vectors of the optical member is known in the art as discussed above.

However, such a device further comprising, *inter alia*, additional optical members having additional reciprocal lattice vectors, wherein the plane including the reciprocal lattice vectors of the first optical member and the reciprocal lattice vectors of the additional optical member defines a 45 degree angle around the optical axis of the incident light; or alternatively a device further comprising, *inter alia*, a phase retarder wherein the phase retarder imparts a difference in polarization between light beams of odd-numbered wavelengths and light beams of even-numbered wavelengths as claimed in the instant application, has not been taught in the prior art.

Art Unit: 2874

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kosaka et al (US 6,188,819 B1) discloses an optical device comprising a photonic crystal member for dividing an incident light beam into plurality of output beams of different wavelengths.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sung H. Pak whose telephone number is (703) 308-4880. The examiner can normally be reached on Monday - Thursday : 6:30am-5:00pm.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Sung H. Pak
Examiner
Art Unit 2874

sp
August 5, 2003



HEMANG SANGHAVI
PRIMARY EXAMINER